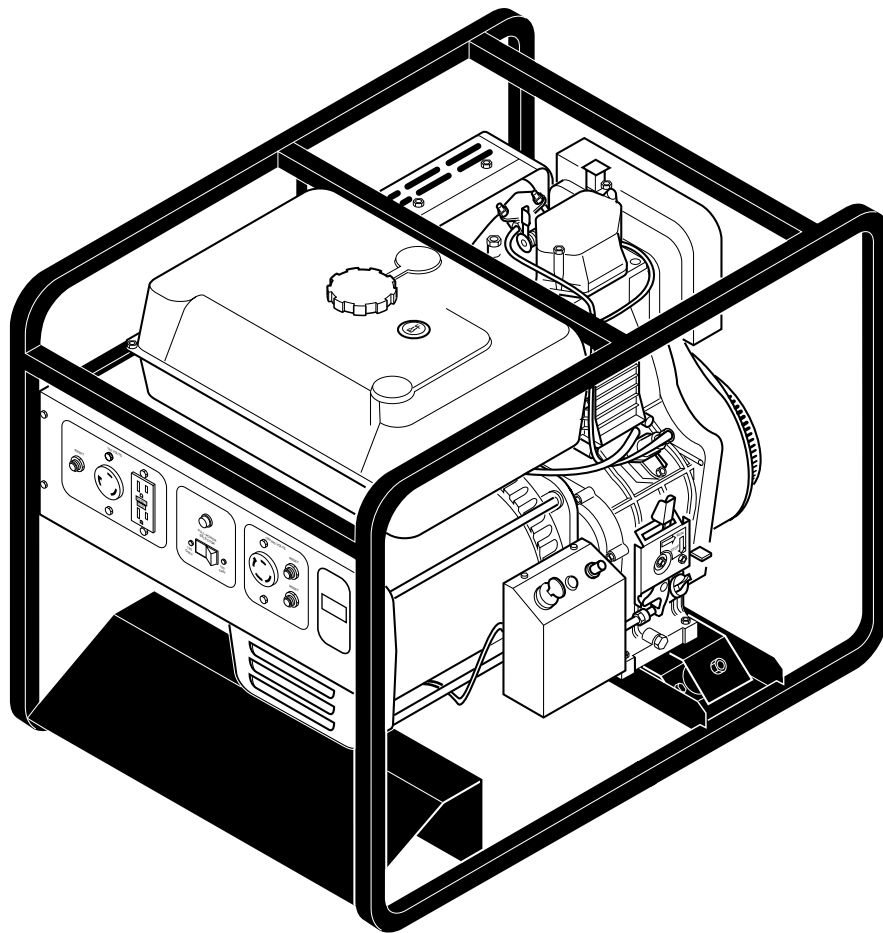


MASTER[®]

PORTABLE DIESEL GENERATOR

OWNER'S OPERATION AND INSTALLATION MANUAL



Generator Model: MGY5000

IMPORTANT

Read and understand this manual before operating or servicing generator. Improper use of generator can cause serious injury. Keep this manual for future reference.

CONTENTS

SECTION	PAGE
Safety Information	3
Product Identification	6
General Information	7
Specifications	7
Unpacking	7
Ventilation	8
Dust, Dirt, Rain, and Snow	8
High and Low Temperature Operation	8
Generator Features	8
Oil Alert System	8
Battery Discharge Lamp	9
Full Power Selector Switch	9
Ground Fault Circuit Interrupter Receptacle	10
Electric Start	10
Receptacle Circuit Breaker	11
Spark Arrester	11
Engine Oil	12
Fuel	13
Battery	13
Generator Grounding	16
Extension Cords	17
Standby Installation To Home or Building	17
Determining Electrical Load For Generator	18
Operation	19
General Information	19
Using Receptacle	19
Power Cord and Plug Requirements	20
Prestart	21
Bleeding Fuel Line	21
Starting	21
High Altitude Operation	24
Adding Electrical Loads	24
Disconnecting Electrical Loads	25
Stopping Engine	25
Maintenance and Repairs	26
Storage	26
Troubleshooting	27
Electrical Component Specifications	27
Wiring Diagrams	28
Technical Service	29
Servicing the Engine	29
Replacement Parts	29
Accessory	29
Illustrated Parts Lists	30-33
Warranty Information	Back Cover

SAFETY INFORMATION

WARNINGS

IMPORTANT: Read this owner's manual and the engine owner's manual carefully. Become familiar with this generator before trying to operate or service it. Know its uses, limitations, and any hazards involved. Improper use of generator can cause severe injury or death from explosion, fire, burns, electrical shock, or carbon monoxide poisoning.

DANGER

Carbon monoxide poisoning may lead to death!

Engine exhaust contains poisonous carbon monoxide gas. Overexposure will cause loss of consciousness and will lead to death. Use only in well-vented areas. Make sure area has plenty of free-moving, fresh, outside air. Never run generator in an enclosed or confined area. Never run generator inside occupied building.


Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness, and nausea. If you have these signs, get fresh air at once! Some people are more affected by carbon monoxide than others. These include pregnant women, persons with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes. Make certain you read and understand all warnings. Keep this manual for reference. It is your guide to safe and proper operation of this generator.

Safety information appears throughout these instructions. Pay close attention to them. Below are definitions for the safety information listed throughout this manual.

DANGER indicates a hazard which will cause severe personal injury, death, or substantial property damage if you ignore warning.

WARNING indicates a hazard which can cause severe personal injury, death, or substantial property damage if you ignore warning.

CAUTION indicates a hazard which will or can cause minor personal injury or property damage if you ignore warning.

1.  **DANGER** Diesel fuel presents a hazard of fire. Diesel fuel is flammable.
 - Keep fuel out of children's reach.
 - Refuel generator in a well-vented area. Do not fill fuel tank in the dark. Do not refuel while engine is running. Unhook all electrical loads and shut off engine before refueling.
 - Do not overfill fuel tank. Always allow room for fuel to expand. If you overfill tank, fuel can overflow onto hot generator. This can cause fire. After refueling, tightly close fuel tank cap.
 - Do not spill fuel. If fuel spills, make sure area is dry before starting engine.
 - Never smoke in refueling area. Never allow open flames or sparks in area.
 - Store fuel in approved container. Store fuel in a well-vented area free of open flames or sparks.

Continued

SAFETY INFORMATION

Continued

2. **⚠ WARNING** Guard against fire hazard. Keep operation area well-vented. Keep generator at least three feet away from any object. Do not place flammable objects near generator.
 - Do not use generator where flammable vapors are present. Some vapors are heavier than air. These vapors settle in low-lying places.
 - Do not use generator in enclosed spaces. This includes motor home or RV generator compartments.

3. **⚠ WARNING** Guard against electric shock. Generator produces high voltage. This high voltage can cause severe electric shock. Only responsible adults should use the generator.
 - Properly ground generator before starting.
 - Never let anyone operate or service generator without proper instructions.
 - Avoid contact with live terminals or bare wires.
 - Do not use generator outdoors in rain or snow.
 - Do not use generator near standing water or snow.
 - Do not use if generator is wet or damp.
 - Do not use generator in highly conductive areas. These areas include metal decking and steelwork.
 - Only use grounded extension cords.
 - Do not use any worn or damaged electric cords. Electric shock or damage to generator may result.
 - Do not wear damp clothing or wet shoes when using generator.

4. **⚠ WARNING** Guard against burns. Hot engine parts can cause severe injury. Use caution and remain alert when using generator.
 - Keep children and animals away from generator while it is running or hot.
 - Keep all covers and shields in place. Keep them tightly secured.
 - The muffler becomes very hot during operation. The muffler remains hot for a while after shutdown. Do not touch muffler while it is hot. Do not let muffler touch anything flammable. Let engine cool before transporting or storing.

5. **⚠ WARNING** Have standby installation to home or building performed by a licensed electrician. Do not let anyone else wire into a utility circuit. Personal injury, equipment damage, or damage to home could occur.

6. **⚠ WARNING** Never connect generator to any existing electrical circuits. The generator output will back-feed into the utility power line. This may electrocute a power company line repair person. Also, if generator is powering electrical circuits, the chance of an electrical fire exists.

7. **⚠ WARNING** Battery gives off explosive gases. Keep sparks, flames, and cigarettes away. Do not remove or install battery cables when engine is cranking or running. Only service or use battery in a well-vented area.

SAFETY INFORMATION

Continued

8. **⚠ WARNING** Battery contains sulfuric acid. Battery acid is poisonous if swallowed. Contact with skin or eyes may cause severe burns. Do not tilt generator with battery installed. Tilting could cause battery acid to spill. Wear protective clothing and face shield when servicing. Keep out of children's reach.
9. **⚠ WARNING** Only a qualified electrical service person should service and repair generator.
 - Generator produces high voltage. Use extreme caution when working on electrical parts.
 - When working on generator, avoid hot muffler, exhaust manifold, and engine parts. Severe burns may occur.
 - Do not work on generator when tired.
 - Use only factory approved replacement parts.
10. **⚠ WARNING** Store generator in a well-vented area. Make sure fuel tank is empty. Never store with fuel in tank.
11. **⚠ CAUTION** Never operate generator
 - if engine speed changes greatly
 - if engine misfires often
 - if powered items overheat
 - if electrical output drops
 - if it is sparking
 - if it produces smoke or flames
 - if it vibrates at high levels
 - if it has a damaged receptacle
12. **⚠ CAUTION** Keep generator and nearby areas clean.
 - Keep generator free of oil, mud, and other foreign matter.
 - Remove anything that creates slippery areas around generator.
 - Remove oily rags and other items that create fire hazards.
 - Keep a fire extinguisher nearby. Make sure it is rated ABC by the NFPA. They are good for all uses. Consult your local fire department.
 - Keep fire extinguisher well maintained. Be familiar with its use.
13. **⚠ CAUTION** Know how to stop engine quickly. Know how to use all controls.
14. **⚠ CAUTION** Prolonged exposure to loud noise can cause hearing loss.
 - When working around generator, wear approved hearing protection.
 - Remember neighbors when using generator.

PRODUCT IDENTIFICATION

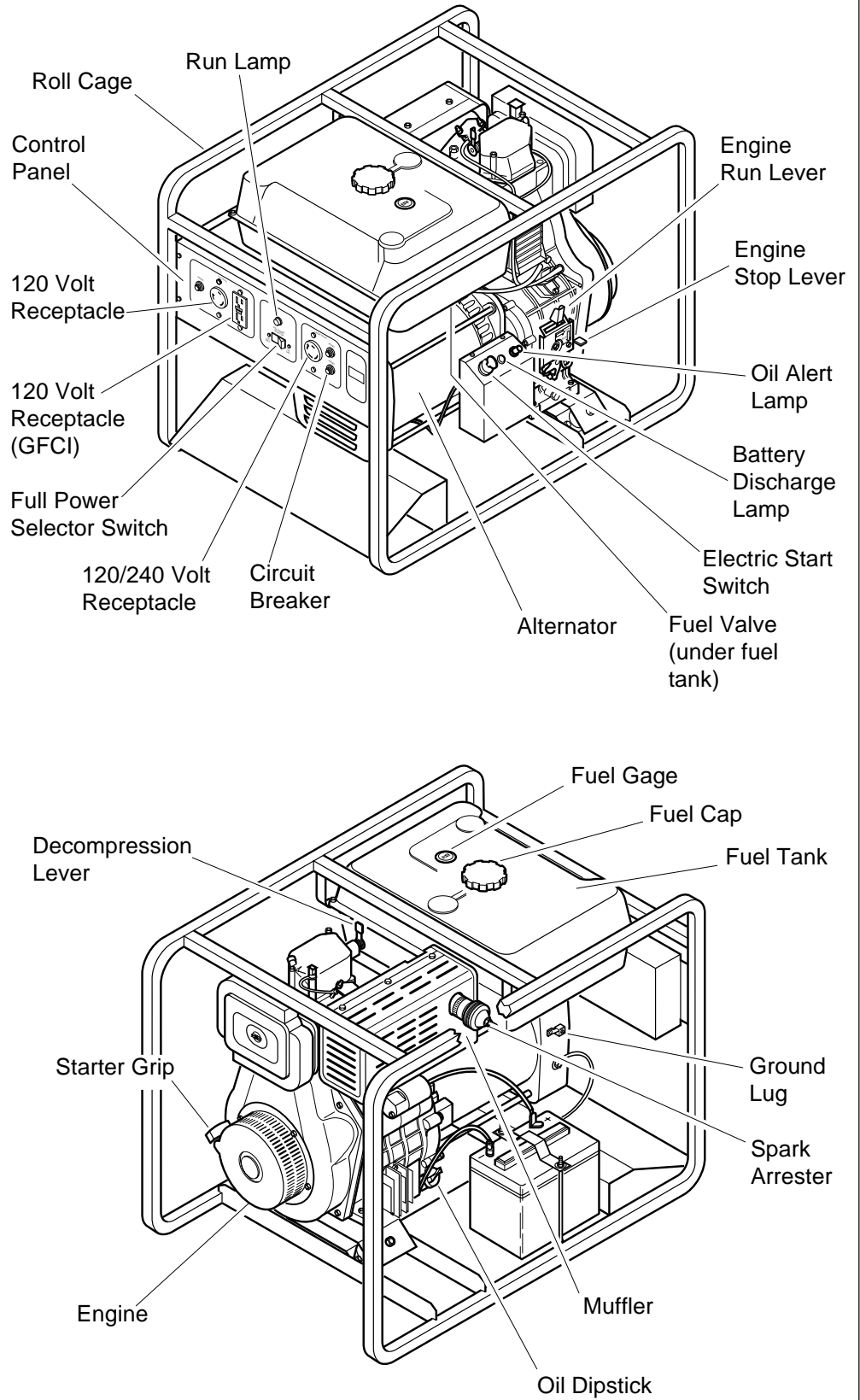


Figure 1 - Portable Generator

GENERAL INFORMATION

This portable generator is rugged and compact. It provides dependable, trouble-free service. The alternator is brushless with revolving fields. Yanmar diesel engine provides long life under heavy use. This engine is governed to maintain engine speed of 3600 RPM under load. 3600 RPM engine speed provides 120/240V, 60 Hz power.

Additional Features

- Circuit breaker protection
- Spark-arresting muffler
- Large fuel tank
- Oil alert system
- Electric starter
- Pressurized lubrication system
- 15-Amp ground fault circuit interrupter (GFCI) receptacle

SPECIFICATIONS

MODEL **MGY5000**

Electrical Specifications

Rated Wattage*	5000
Rated Amperage	
120 Volt	41.7
240 Volt	20.8

Receptacle Specifications

120-Volt, 15-Amp GFCI	Yes
120-Volt, 30-Amp Twist-Lock	Yes
120/240-Volt, 20-Amp Twist-lock	Yes
120-Volt Full-Power Switch	Yes

General Specifications

Yanmar Engine H.P.	9
Yanmar Engine Model	L90
Fuel Type	Diesel
Fuel Tank Capacity	4.2 Gallons
Oil Alert System	Yes
Electric Start	Yes
Weight (pounds)	241

* Single-phase, 1.0 power factor

UNPACKING

1. Remove generator from carton.
2. Remove any protective packaging applied to generator for shipment.
3. Check for loose or missing parts. Check for shipping damage. If any parts are missing or damaged, promptly inform dealer where you bought generator.
4. Battery cables are in a separate bag inside generator carton. You must install these cables to engine. See *Battery*, page 13 for installation instructions.

VENTILATION

DANGER

Use only in well-vented areas. Make sure area has plenty of free-moving, fresh, outside air. Never run generator in an enclosed or confined area. Never run generator inside occupied building. Engine exhaust contains poisonous carbon monoxide gas. Overexposure will cause loss of consciousness and will lead to death.

This generator needs cooling air to run properly. Never block free-flowing, cooling air to generator. Overheating will occur without cooling air. This will damage the generator. Keep generator at least three feet away from any object.

DUST, DIRT, RAIN, AND SNOW

DANGER

Do not use generator outdoors in rain or snow. Do not use generator near standing water or snow. Do not use if generator is wet or damp. Operating generator in these conditions increases the risk of electrocution. Severe injury or death can occur.

Do not use generator in extremely dusty or dirty conditions. This will severely affect its life. Keep generator clean. Do not allow dust, dirt, rain, or snow to collect on it. Protect generator from outdoor elements.

HIGH AND LOW TEMPERATURE OPERATION

Air temperature affects generator output. Output drops 1% for each 10° temperature rise above 60° F. Low temperatures may make the engine hard to start. See engine owner's manual for more information.

GENERATOR FEATURES

OIL ALERT SYSTEM

The oil alert system protects the engine from low oil damage. This system automatically shuts down the engine and prevents engine restarting if the oil pressure falls too low.

If this system shuts down the engine, the engine will not start until you add oil. The oil alert lamp is near engine starter switch (see Figure 2, page 9). Add oil to engine (see *Engine Oil*, page 12).

See engine owner's manual for more information.

GENERATOR FEATURES

Continued

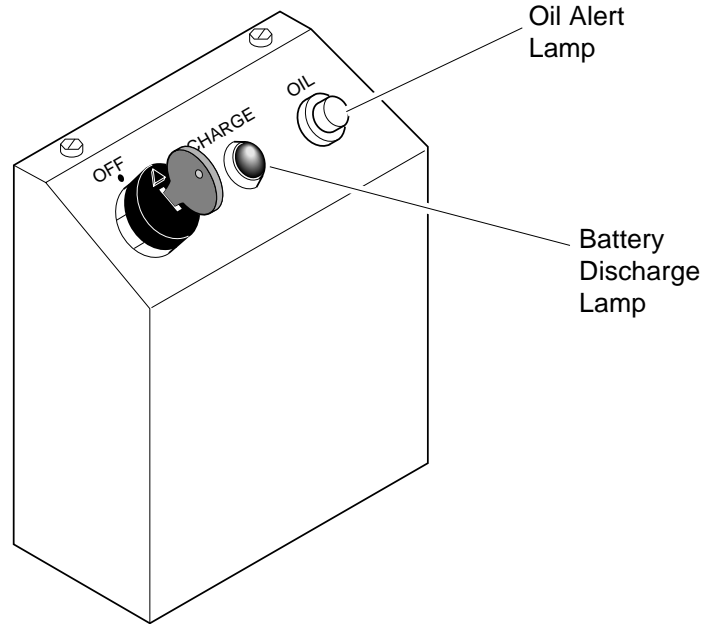


Figure 2 - Battery Discharge Lamp and Oil Alert Lamp Location

BATTERY DISCHARGE LAMP

The battery discharge lamp (see Figure 2, above) will light if battery charger is not operating while engine is running. If this happens, the battery will not charge and will eventually run down. Have battery charging circuit repaired by authorized service person.

FULL POWER SELECTOR SWITCH

The full power selector switch is on the control panel. The switch has two positions: 120 VOLT ONLY, and 120/240 VOLT.

120 VOLT ONLY: This position sends full power to the 120V receptacles only. 240V power is not available. Use this position when powering 120V items only.

120/240 VOLT: This position sends full power to the 120/240V receptacle. It also powers the 120V receptacles at reduced wattage capacity.

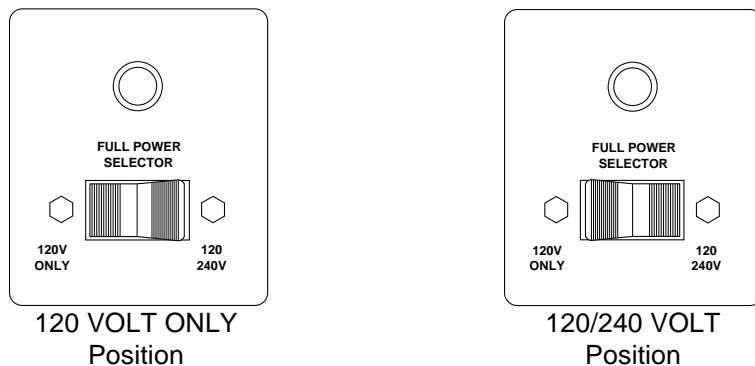


Figure 3 - Full Power Selector Switch

IMPORTANT: Do not move the full power selector switch while powering electrical items. Unplug all items before moving switch. Failure to do so can damage switch.

GENERATOR FEATURES

Continued

GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE

This generator has a 120-volt ground fault circuit interrupter (GFCI) receptacle. The GFCI receptacle is on the control panel. The GFCI protects you against hazardous electrical shock caused when your body becomes a path through which electricity travels to reach ground. This could happen when you touch an appliance or cord that is 'live' through faulty mechanism, damp or worn insulation, etc.

When protected by the GFCI, you may still feel a shock, but the GFCI should cut it off quickly. A person in normal health should not receive serious injury. **Note:** Infants and very small children may still be affected.

Test Procedure

Check the GFCI receptacle every month. This insures it is working right.

1. Push black TEST button. Red RESET button should pop out. This should trip GFCI, resulting in no electrical power at receptacle. Verify this by plugging test lamp with good bulb into receptacle. If lamp does not work, GFCI receptacle is good.

⚠ WARNING

If RESET button does not pop out, do not use the GFCI receptacle. Contact a qualified electrician for repairs.

2. If the GFCI receptacle tests okay, restore power by pushing the RESET button back in. The test lamp should work at this time. **IMPORTANT:** You must press the RESET button firmly and fully. It should lock into place. If the GFCI does not lock into place, do not use receptacle. Contact a qualified electrician for repairs.

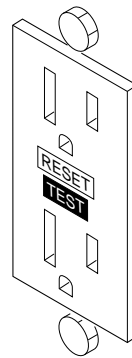


Figure 4 - GFCI Receptacle

ELECTRIC START

This model has an electric starter. A battery is not supplied with generator. You must provide a 12-volt, 45-amp-hour battery. For more battery information, see *Battery*, page 13.

GENERATOR FEATURES

Continued

RECEPTACLE CIRCUIT BREAKER

The circuit breakers protect the receptacles and alternator. Overloading generator will trip circuit breaker. A short circuit in item being powered will also trip breaker. If this occurs, unplug electrical load from receptacle. Let circuit breaker cool down. Push circuit breaker button to reset.

Electric motors need higher starting current. They require up to three-times their rated wattage to start. The starting current needed may be too high. This can cause nuisance circuit breaker tripping. To help prevent this, start electric motors first. Connect additional items to generator after starting motors. If this continues to happen, reduce the total generator load.

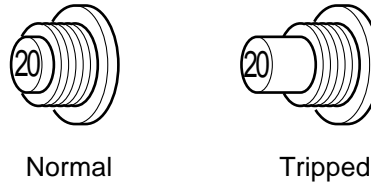


Figure 5 - Receptacle Circuit Breaker Button

SPARK ARRESTER

We ship a spark arrester with this generator. You must install spark arrester to muffler (see Figure 6).

A spark arrester is required if using generator in a national forest and other designated state and local areas. Check local codes.

The spark arrester needs periodic cleaning. A dirty spark arrester reduces engine output and increases fuel consumption. It also makes starting difficult. See engine owner's manual for cleaning instructions.

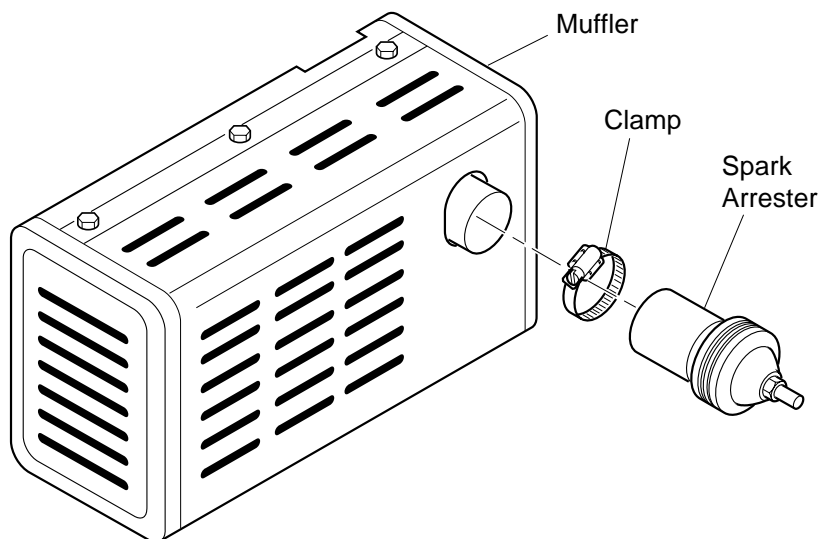


Figure 6 - Installing Spark Arrester

ENGINE OIL

We ship the generator without oil in the engine crankcase. You must add oil before starting engine. See engine owner's manual for specific oil type.

CHECKING OIL LEVEL AND ADDING OIL

Follow steps below to check oil level. Make sure engine is level and stopped.

1. Remove either dipstick (see Figure 7). Wipe dipstick clean.
2. Insert dipstick into oil filler neck. Do not screw it in. Oil level should be at top of filler neck. Oil should cover most of dipstick.
3. If level is low, fill to top of oil filler neck (see Figure 7). Only use oil recommended in engine owner's manual.

NOTE: If oil level is too low, oil alert system will shutdown engine and prevent engine from restarting.

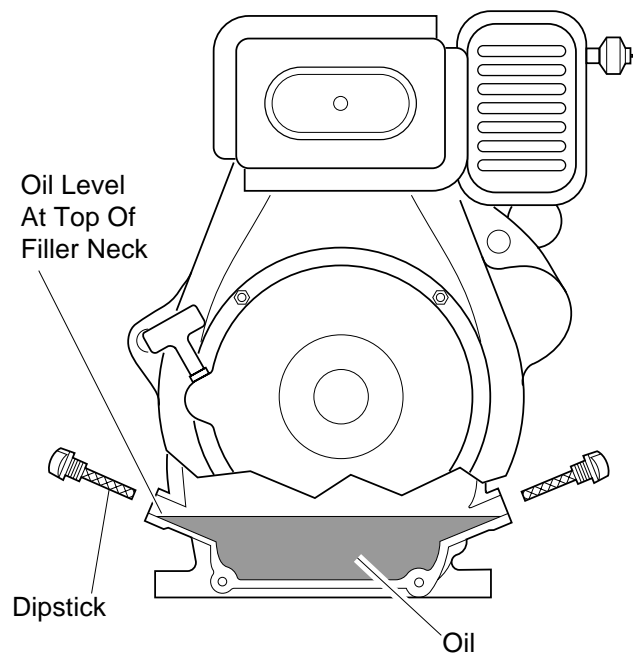


Figure 7 - Checking Oil Level

FUEL

WARNING

Diesel fuel presents a hazard of fire. Diesel fuel is flammable.

- Keep fuel out of children's reach.
- Refuel generator in a well-vented area. Do not fill fuel tank in the dark. Do not refuel while engine is running. Unhook all electrical loads and shut off engine before refueling.
- Do not overfill fuel tank. Always allow room for fuel to expand. If you overfill tank, fuel can overflow onto hot engine. This can cause fire. After refueling, tightly close fuel tank cap.
- Do not spill fuel. If fuel spills, make sure area is dry before starting engine.
- Never smoke in refueling area. Never allow open flames or sparks in area.
- Store fuel in approved container. Store fuel in a well-vented area free of open flames or sparks.

Use clean, fresh, diesel fuel. Use diesel fuel with cetane rating of 45 or higher. Avoid getting dirt, dust, or water in fuel tank.

See engine owner's manual for more information.

BATTERY

WARNING

Battery gives off explosive gases. Keep sparks, flames, and cigarettes away. Do not remove or install battery cables when engine is cranking or running. Only service or use battery in a well-vented area.

WARNING

Battery contains sulfuric acid. Contact with skin or eyes may cause severe burns. Do not tilt generator with battery installed. Tilting could cause battery acid to spill. Wear protective clothing and face shield when servicing. Keep out of children's reach.

- If battery acid gets on your skin, wash with water.
- If battery acid gets in your eyes, flush with water at least 15 minutes. Call a doctor at once.

Battery acid is poisonous.

- If swallowed, drink large amounts of water or milk. Follow with milk of magnesia or vegetable oil. Call a doctor at once.

BATTERY

Continued

⚠ CAUTION

If you remove battery, insulate the red, positive (+) battery cable terminal. Insulate with electrical tape. Exposed terminal may spark when generator runs.

IMPORTANT: Make sure battery connections are the correct polarity. This generator use negative ground, 12-volt DC starting system.

This generator has an electric starter. A battery is not supplied with generator. You must provide a 12-volt, 45-amp-hour battery. The positive and negative battery cables are supplied with generator. You must install these cables before mounting battery.

Always wear safety glasses when working with battery. Make sure battery terminals are clean. Make sure cable connections are tight.

Always shut down engine before removing or attaching battery cables. Always remove the negative (-) cable first. Always attach negative (-) cable last.

INSTALLING BATTERY CABLES TO ENGINE

1. Attach the red, positive (+) battery cable to the starter solenoid on engine (see Figure 8).
2. Attach the black, negative (-) battery cable to the engine block. Use the bolt, nut, and two washers provided with the battery cables. Attach cable as shown in Figure 9.

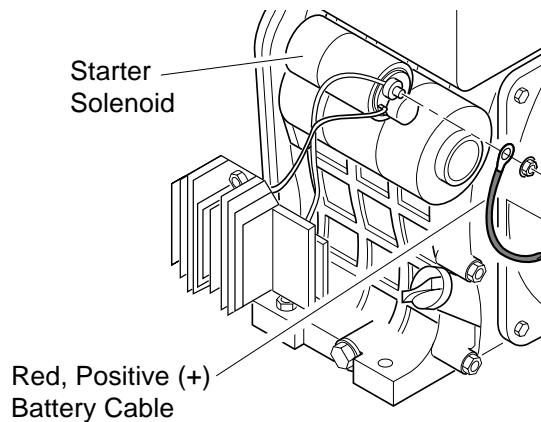


Figure 8 - Connecting Red, Positive (+) Battery Cable to Starter Solenoid on Engine

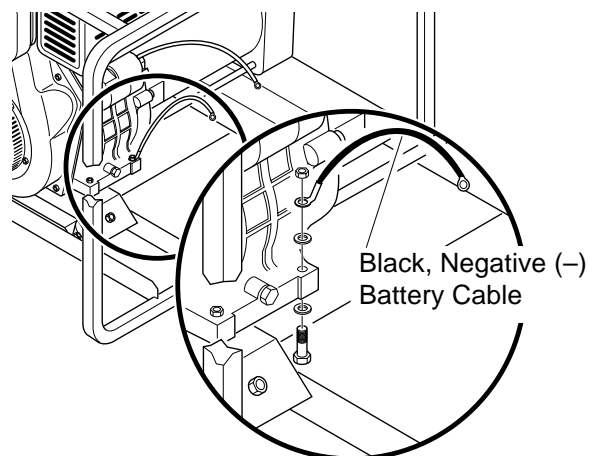


Figure 9 - Connecting Black, Negative (-) Battery Cable to Engine Block

BATTERY

Continued

MOUNTING BATTERY TO GENERATOR

1. Secure battery to generator by battery hold-down system. This system consists of the battery mounting bracket, hook bolts, and nuts (see Figure 10).
2. Locate the red, positive (+) battery cable from starter solenoid. Connect it to the positive (+) battery terminal (see Figure 11).
3. Locate the black, negative (-) battery cable attached to engine block. Connect it to the negative (-) battery terminal (see Figure 11).
4. Check battery before starting engine. Make sure fluid levels are full. Make sure battery is charged.

See engine owner's manual for more information.

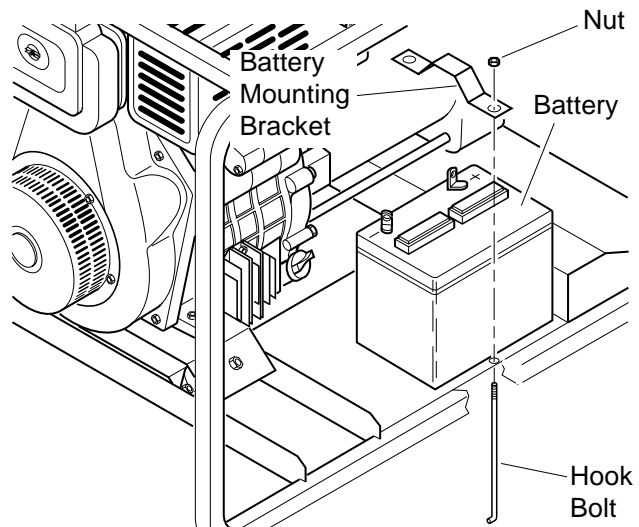


Figure 10 - Battery Hold-Down System

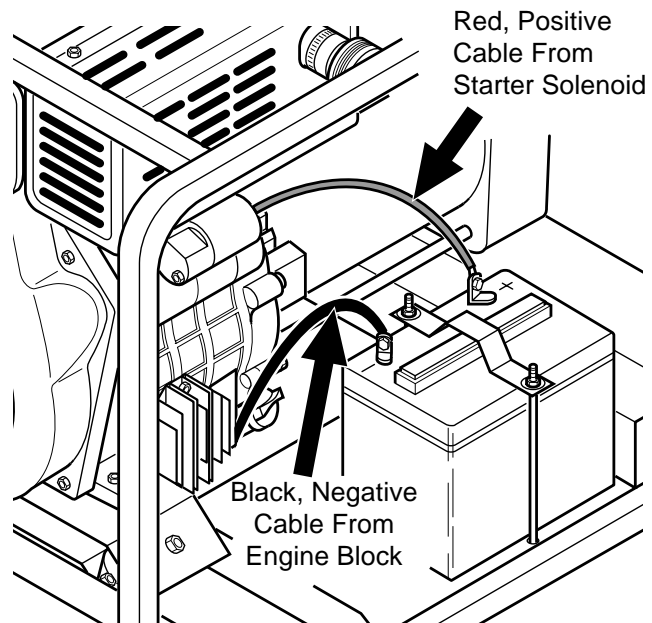


Figure 11 - Connecting Positive and Negative Cables to Battery

GENERATOR GROUNDING

⚠ CAUTION

You must properly earth-ground generator before starting. This will help guard against deadly electric shock. Only use grounded plugs with generator. Only use grounded extension cords. Only use three-wire or double-insulated power tools.

Grounding generator helps prevent electric shock from a ground fault condition. Locate ground lug on end of generator housing (see Figure 12). Attach a #10 stranded-copper ground wire to ground lug. Drive grounding point into ground. Grounding point can be a stake, grounding rod, or pipe. Grounding point should be copper or brass. Attach ground wire to grounding point. You must supply the ground wire and grounding point. They do not come with generator. Follow the National Electrical Code and all state and local codes. Consult your power company or a licensed electrician.

⚠ CAUTION

For a grounding point, do not use metal pipe being used to carry combustible materials or gases.

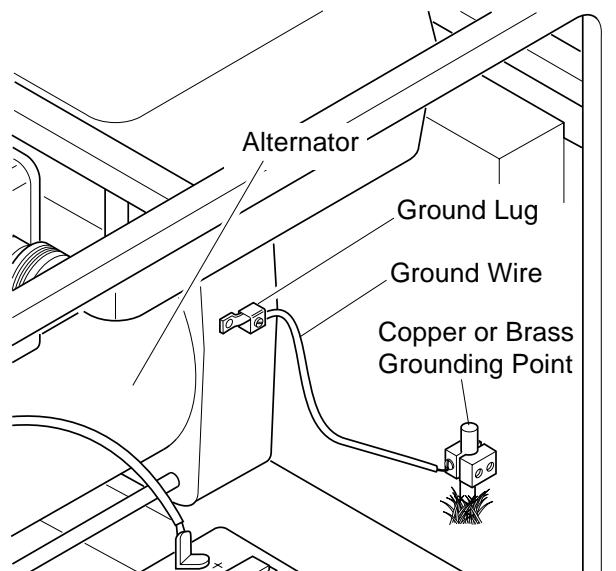


Figure 12 - Grounding Generator

EXTENSION CORDS

Only use grounded extension cords. Be sure to use extension cord with proper wire gauge size. See chart below.

Recommended Minimum Wire Gauges (AWG) for Extension Cords

Ampere Load	AWG for Length of Cord in Feet		
	50'	100'	150'
2	18	18	18
3	18	18	18
4	16	16	16
5	16	16	16
6	16	16	14
8	16	14	12
10	16	14	12
12	14	14	12
14	14	12	10
16	12	12	10
20	10	10	8

STANDBY INSTALLATION TO HOME OR BUILDING

WARNING

Have standby installation performed by a skilled, licensed electrician. Do not let anyone else wire into a utility circuit. Personal injury, equipment damage, or damage to home could occur.

IMPORTANT: This generator will not power your entire home. Most home utility electric service is more than 60 amps. This will exceed generator output. Only power needed items during a power outage. Make sure total wattage of electrical load does not exceed rated wattage of generator.

You can use this generator as a standby power source. During a power outage, the generator will power selected items in a building. Have generator and additional wiring installed by a skilled, licensed electrician. This is not a do-it-yourself job. Follow all local codes.

WARNING

The electrician must install a double-throw transfer switch. This isolates existing electrical circuits from the utility power line. If not isolated, generator output will back-feed into utility power line. This may electrocute a power company line repair person.

DETERMINING ELECTRICAL LOAD FOR GENERATOR

You must decide what electrical load your generator can power. Do this before using generator. Use the following four-step method. It will help you select a load that is not too large. Make sure total wattage of all electrical loads does not exceed 5000 watts. Electric motors present a special problem when figuring load. Read Step 3 carefully.

1. Make two lists of items you want powered by generator. List all motors and motor-powered appliances in one. List all lights, small appliances, etc. in the other. For standby service to home or building, only include items you must power.
2. Enter running watts of each item except motors. The light bulb or appliance nameplate lists its wattage. Remember, 1KW = 1000 watts. *Note:* The nameplate may not list wattage. It may only list volts and amps. The formula for finding wattage is: Volts x Amps = Watts. For example: An appliance nameplate states 3 amps at 120 volts. 3 amps x 120 volts = 360 watts.
3. Electric motors present a special problem. They require up to 3-times their rated wattage to start. Chart 2, below, shows starting watts for different size motors. For example: an electric motor nameplate states 5 amps at 120 volts. 5 amps x 120 volts = 600 watts running. Multiply this figure by 3. This will show the starting watts needed. 600 watts x 3 = 1800 watts to start. When figuring the generator load for motors, you must use the starting watts figure. Do not use the running watts figure. *Note:* Some motors require nearly the same wattage to run as to start. These items include saws, drills, hair dryers, and food mixers. See Chart 1 for typical appliance wattage examples.
4. Add watts and starting watts of all items. This total must not be larger than 5000 watts. It is a good idea to have up to 25% extra capacity for future needs or extra equipment.

Chart 1—Typical Electric Appliance Wattages

Equipment	Running Watts	Starting Watts	Equipment	Running Watts	Starting Watts
Light bulb (100W)	100	100	1/2" Drill	1000	1250
Radio	150	150	Toaster	1200	1200
Fan	200	600	Coffee maker	1200	1200
Television	400	400	Skillet	1200	1200
Furnace fan (1/3 hp)	600	1800	14" Chain saw	1200	1500
Vacuum cleaner	600	750	Water well pump		
Sump pump (1/3 hp)	700	2100	(1/2 hp)	1000	3000
Refrigerator/freezer	800	2400	Hot plate/range		
6" Circular saw	800	1000	(per burner)	1500	1500
Floodlight	1000	1000	Water heater	5000	5000

Chart 2

Motor HP Rating	Approximate Running Watts	Approximate Starting Watts*			
		Universal Motors (small appliance)	Repulsion Induction Motors	Capacitor Motors	Split Phase Motors
1/8	275	400	600	850	1200
1/4	400	500	850	1050	1700
1/3	450	600	975	1350	1950
1/2	600	750	1300	1800	2600
3/4	850	1000	1900	2600	x
1	1000	1250	2300	3000	x
1 1/2	1600	1750	3200	4200	x
2	2000	2350	3900	x	x

* – Always use starting watts, not running watts, when figuring correct electrical load.

x – Motors of higher horsepower are not generally used.

OPERATION

GENERAL INFORMATION

This generator is not large enough to power your entire home. Do not connect generator to any existing electrical circuits. Plug items directly into generator receptacles. Do not exceed amperage rating of receptacles. Only use grounded cords.

⚠ DANGER

Use only in well-vented areas. Make sure area has plenty of free-moving, fresh, outside air. Never run generator in an enclosed or confined area. Never run generator inside occupied building. Engine exhaust contains poisonous carbon monoxide gas. Overexposure will cause loss of consciousness and will lead to death.

⚠ WARNING

Never connect generator to any existing electrical circuits. The generator output will back-feed into the utility power line. This may electrocute a power company line repair person. Also, if generator is powering electrical circuits, the chance of an electrical fire exists.

Note: We supply the engine owner's manual with generator. Refer to that manual for questions concerning engine operation.

USING RECEPTACLE

Note: Do not exceed amperage rating of receptacles. Exceeding rating will trip receptacle circuit breaker.

Use receptacles properly. Improper use could damage generator. Use only grounded extension cords. Power only grounded or double-insulated items. Do not overload receptacles. This generator has the following receptacles (see Figure 13):

- 120V, 15-amp GFCI duplex receptacle
- 120V, 30-amp twist-lock receptacle
- 120/240V, 20-amp twist-lock receptacle

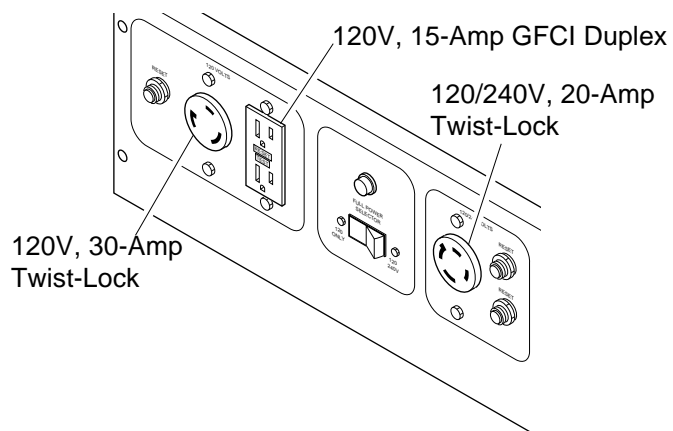


Figure 13 - Receptacle Locations

OPERATION

Continued

POWER CORD AND PLUG REQUIREMENTS

120V, 30-amp twist-lock receptacle

- NEMA L5-30P plug
- Three-wire, 30-amp cord

120/240V, 20-amp twist-lock receptacle

- NEMA L14-20P (20-amp) plug
- Four-wire, 20-amp cord

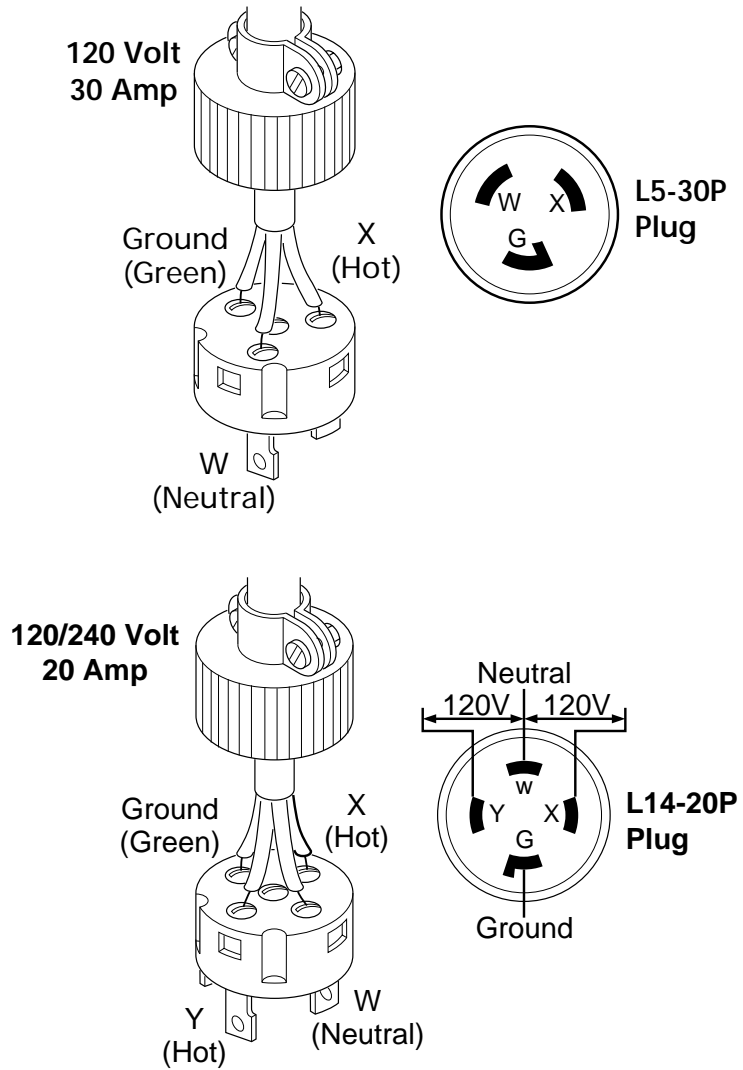


Figure 14 - Cord and Plug Configurations

OPERATION

Continued

PRESTART

Operate generator on a firm, dry, and clean surface. The surface must be level. Protect generator from heavy dust, sand, dirt, rain, or snow. Do not locate generator near standing water and snow. Make sure area is well-vented.

WARNING

Only responsible adults should use generator. Never let anyone operate generator without proper instructions.

Note: If oil level is too low, oil alert system will keep engine from starting (see *Oil Alert System*, page 8). Make sure oil level is full before starting. See *Engine Oil*, page 12.

Before starting engine, disconnect all electric loads from generator.

You may need to bleed fuel line to remove trapped air

- if starting engine for first time
- if starting engine after allowing generator to run out of fuel

Follow the directions below to bleed fuel line.

BLEEDING FUEL LINE

1. Loosen fuel line clamp and remove fuel line from engine. Place open end of fuel line over a clean container to catch any fuel spilled in step 3, below.
2. Move fuel valve lever to the “O” (open) position (see Figure 15, page 22).
3. Allow air to bleed from line. When fuel exits fuel line in a steady stream, reattach fuel line to engine.
4. Add spilled fuel back into fuel tank.

STARTING

CAUTION

You must always run the engine at full speed. Do not run engine at lower speeds. At full speed, the engine runs at 3600 RPM under load. The engine must maintain 3600 RPM for generator to create correct voltage. Running engine at lower speeds will damage generator and powered items.

Continued

OPERATION

Continued

IMPORTANT: Never start generator with electrical loads connected. Start engine before adding electrical loads.

1. Make sure fuel tank is full. See *Fuel*, page 13 for fuel information.
2. Move fuel valve lever to the “O” (open) position (see Figure 15).
3. Move engine run lever to the RUN position (see Figure 16).

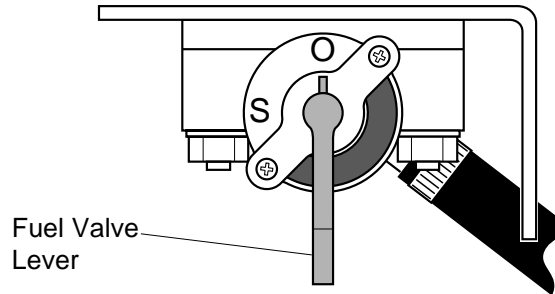


Figure 15 - Fuel Valve Lever In “O” (open) Position

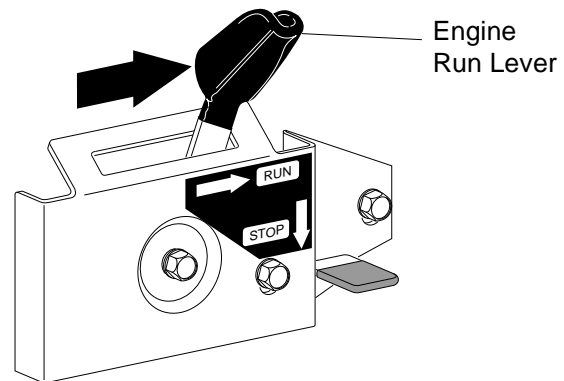


Figure 16 - Engine Run Lever In RUN Position

4. Start the engine.

A. Electric Starter

- I. Push decompression lever all the way down (see Figure 17). Decompression lever will stay in this position until you turn starting key.
- II. Turn the starting key clockwise to the START position (see Figure 18). Hold it there until engine starts.
- III. When engine starts, release key.

IMPORTANT: Do not use electric starter more than ten seconds. Starter motor damage may occur. If engine fails to start, release the key and wait 15 seconds. After 15 seconds, try starting again.

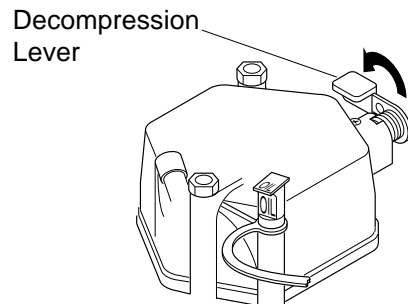


Figure 17 - Decompression Lever

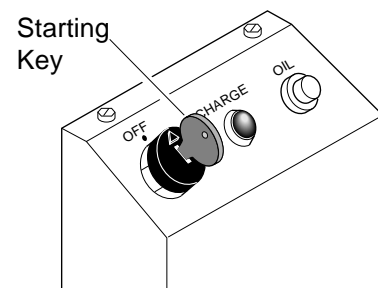


Figure 18 - Starting Key

OPERATION

Continued

In cold weather, your engine may be hard to start. If so, remove the rubber plug on the rocker arm cover (see Figure 19). Add 2 cc of engine oil in hole. Replace rubber plug. Repeat starting procedure.

⚠ WARNING

Never use gasoline, paint thinner, or any other flammable liquid as a starting aid. An explosion may occur.

⚠ CAUTION

Keep rubber plug on rocker arm in place when not adding oil for starting. Rain, dirt, and other debris may enter the engine. This can damage the engine.

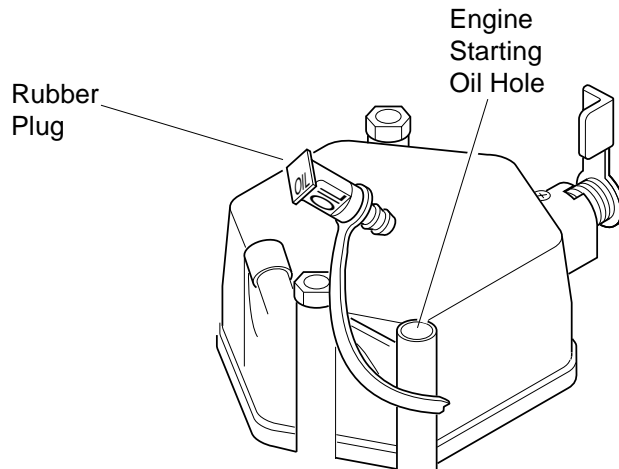


Figure 19 - Rubber Plug On Rocker Arm Cover

B. Recoil Starter

- I. Slowly pull starter rope until you feel strong resistance. Gently return starter rope to engine.
- II. Push decompression lever all the way down (see Figure 20). Decompression lever will stay in this position until you pull starter rope.

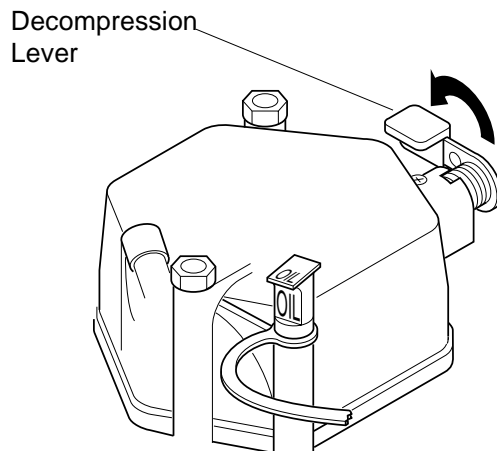


Figure 20 - Decompression Lever

OPERATION

Continued

- III. Firmly grasp starter grip with both hands. Remove slack from starter rope by lightly pulling starter grip.
- IV. To start engine, pull starter rope briskly. You must pull the starter rope all the way out. If not, the engine will not start.

IMPORTANT: Do not let starter grip snap back against engine. Return it gently. This will prevent damage to starter.

In cold weather, your engine may be hard to start. If so, remove the rubber plug on the rocker arm cover (see Figure 19, page 23). Add 2 cc of engine oil in hole. Replace rubber plug. Repeat starting procedure.

WARNING

Never use gasoline, paint thinner, or any other flammable liquid as a starting aid. An explosion may occur.

CAUTION

Keep rubber plug on rocker arm in place when not adding oil for starting. Rain, dirt, and other debris may enter the engine. This can damage the engine.

If engine does not start, repeat steps under *B. Recoil Starter* on page 23.

HIGH ALTITUDE OPERATION

This generator will not perform well at high altitudes without proper adjustment. Contact a Yanmar dealer for adjustment information.

ADDING ELECTRICAL LOADS

IMPORTANT: Do not overload generator. Make sure total wattage of all electrical loads does not exceed rated wattage of generator. Overloading may shorten generator life. It could also cause internal damage to generator. Overloading will trip circuit breaker.

IMPORTANT: Keep full power selector switch in the 120 VOLT ONLY position if only powering 120V items. Only move switch to 120/240 VOLT position if powering 240V items.

1. Check items to be powered. Their nameplate lists their wattage ratings.

Note: The wattage ratings for some electrical motors are misleading. They may require up to 3-times their rated wattage to start. You must figure total electrical load wattage. Make sure total wattage of all electrical loads does not exceed rated wattage of generator. See *Determining Electrical Load For Generator*, page 18.

2. Start engine. Let engine reach full speed.
3. Connect electrical loads one at a time. If the load consists of electric motors, start them first. Always start the largest first. Start each motor individually.

OPERATION

Continued

DISCONNECTING ELECTRIC LOADS

Remove electrical loads one at a time. Remove voltage sensitive items first. Voltage sensitive items include TVs, VCRs, and other home electronic items.

STOPPING ENGINE

Follow the steps below to stop engine.

1. Remove all electrical loads from generator (see *Disconnecting Electrical Loads*, above). Remove electrical loads one at a time.
2. Let engine run for two or three minutes after removing electrical loads. This lets engine cool slightly.
3. Push down engine stop lever (see Figure 21). This releases engine run lever and stops engine. Do not stop engine with the decompression lever.
4. Turn the starter key to the OFF position.
5. Turn fuel valve lever off. Do this by moving valve lever to the “S” position (see Figure 22).
6. Slowly pull starter rope until you feel strong resistance. Gently return starter rope to engine. This action closes the intake and exhaust valves. This prevents rust from forming while not using engine.

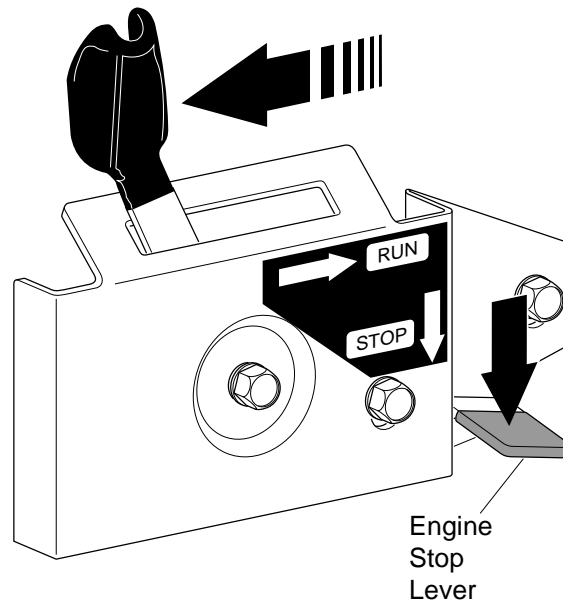


Figure 21 - Pushing Down Engine Stop Lever

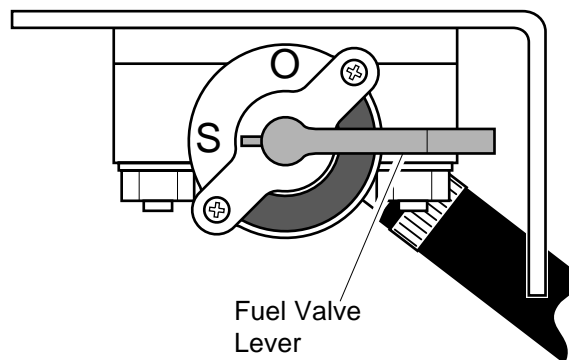


Figure 22 - Fuel Valve Lever In “S” Position

MAINTENANCE AND REPAIRS

WARNING

Only a qualified electrical service person should service and repair the alternator on this generator. Use only factory approved replacement parts.

CAUTION

You must always run the engine at full speed. Do not run engine at lower speeds. At full speed, the engine runs at 3600 RPM under load. The engine must maintain 3600 RPM for generator to create correct voltage. Running engine at lower speeds will damage generator and powered items.

CAUTION

Shut off generator before performing maintenance.

IMPORTANT: Keep generator level when servicing. Never turn generator upside down or stand it on end to service.

Note: We supply the engine owner's manual with generator. Refer to that manual for questions concerning engine maintenance and repairs.

Non-engine parts require little maintenance. Keep generator clean. Use a damp cloth to clean outside surfaces. Never use water to clean generator. Water can cause damage to internal parts. Use vacuum to clean air inlet and outlet louvers of alternator.

STORAGE

WARNING

Remove all fuel from fuel tank before storing generator. Store fuel in approved container. Store fuel in a well-vented area free of open flames or sparks.

WARNING

The muffler becomes very hot during operation. The muffler remains hot for a while after shutdown. Let engine cool before storing.

IMPORTANT: Keep generator level while in storage. Never store generator upside down or standing on end.

Note: We supply the engine owner's manual with generator. Refer to that manual for questions concerning engine storage.

Cover and store generator in a clean, dry place. Do not expose generator to extreme high or low temperatures during storage.

TROUBLE-SHOOTING

Note: See engine owner's manual for engine troubleshooting.

WARNING

Only a qualified electrical service person should service and repair generator. Use only factory approved replacement parts.

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
No voltage when starting generator with no electrical load	<ol style="list-style-type: none"> 1. Defective capacitor 2. Winding short circuit or loose connections 3. Defective rotor diode 4. Loss of residual magnetism 	<ol style="list-style-type: none"> 1. Replace capacitor 2. Check resistance of coils (see <i>Electrical Component Specifications</i>, below) 3. Replace both diodes on rotor 4. Apply 12-volt battery to capacitor terminals for 2-3 seconds
Voltage is less than normal voltage with no electrical load	<ol style="list-style-type: none"> 1. Engine speed too low 2. Clogged spark arrester 3. Defective rotor diode 4. Partial short circuit in winding 5. Defective capacitor 	<ol style="list-style-type: none"> 1. Set engine speed to 3720 RPM (62 Hz) with no load 2. Clean arrester. See engine owner's manual 3. Replace both diodes on rotor 4. Check resistance of coils (see <i>Electrical Component Specifications</i>, below) 5. Replace capacitor
Voltmeter reading more than 10% high with no electrical load	<ol style="list-style-type: none"> 1. Engine speed too high 	<ol style="list-style-type: none"> 1. Set engine speed to 3720 RPM (62 Hz) with no load
Voltmeter reading correct with no electrical load, but more than 10% low when electrical load is added	<ol style="list-style-type: none"> 1. Defective rotor diode 2. Electrical load too high 3. Engine not running properly 	<ol style="list-style-type: none"> 1. Replace both diodes on rotor 2. Do not overload generator 3. Contact an authorized engine service center

ELECTRICAL COMPONENT SPECIFICATIONS

Model	Resistance in Ohms				Capacitor, MFD 450 Volt	Diodes (2) 800 Volt
	Stator Main Winding *	Stator Auxiliary Winding Δ	Rotor Primary Winding \dagger	Rotor Secondary Winding \dagger		
MGY5000	0.54	1.38	0.61	2.29	50	70 Amp

* Connect T2 (green) and T3 (black). Measure resistance between T1 (red) and T4 (yellow).

Δ Resistance between brown and white leads.

\dagger Remove diodes to check resistance.

WIRING DIAGRAMS

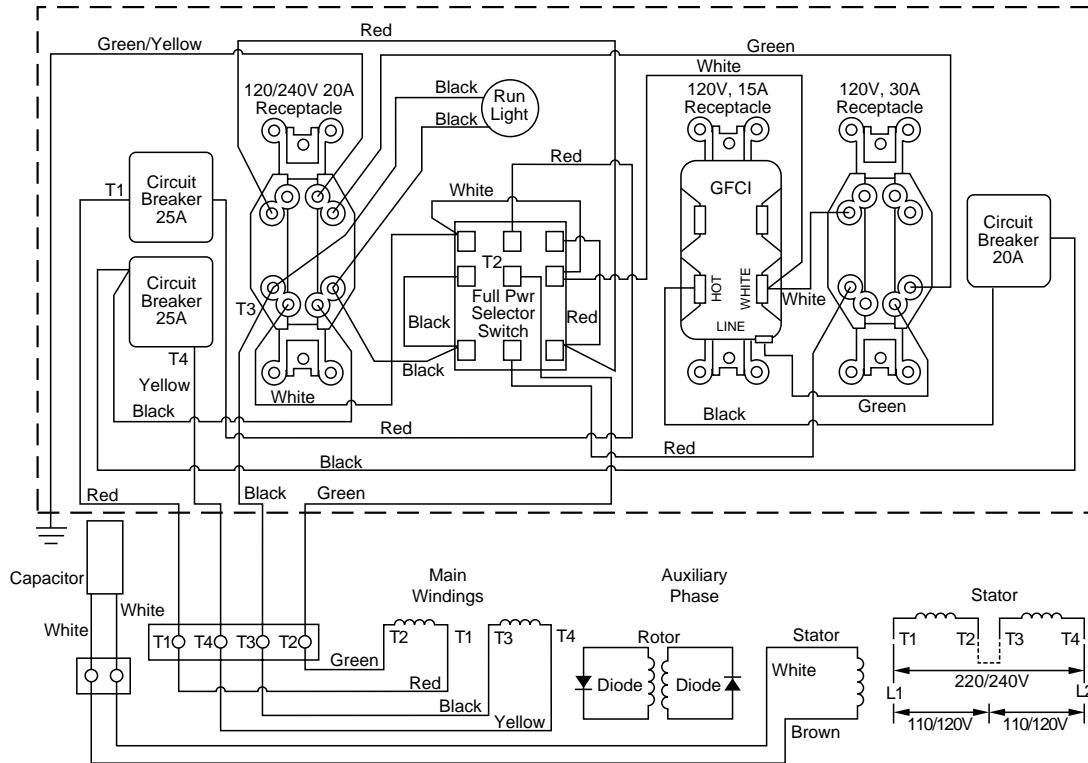


Figure 23 - Alternator Wiring Diagram

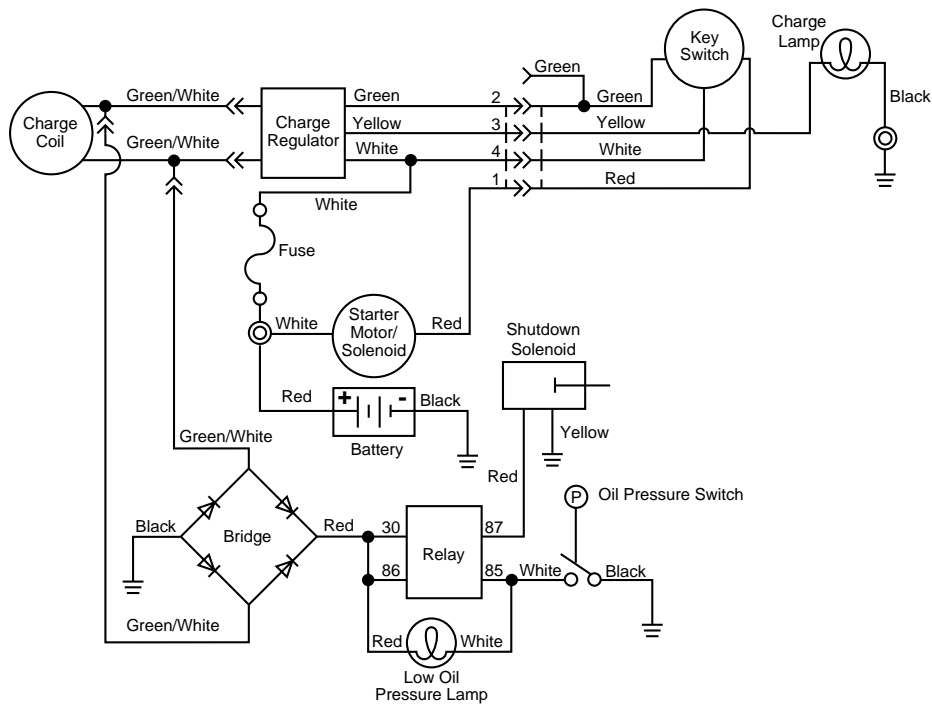


Figure 24 - Engine Wiring Diagram

TECHNICAL SERVICE

You may have further questions about installation, operation, or troubleshooting. If so, contact DESA International's Technical Service Department at 1-800-323-5190.

SERVICING THE ENGINE

For Yanmar engine replacement parts, contact Parts Company of America at 1-800-323-0620. Yanmar engine servicing should be handled by your nearest authorized Yanmar engine service firm. Contact Yanmar at 1-714-630-9415 for nearest authorized Yanmar engine service firm.

REPLACEMENT PARTS

Note: Use only original replacement parts. This will protect your warranty coverage for parts replaced under warranty.

Parts Under Warranty

Contact authorized dealers of this product. If they cannot supply original replacement part(s), call DESA International's Technical Service Department at 1-800-323-5190.

When calling DESA International, have ready

- your name
- your address
- model number of your generator
- how generator is malfunctioning
- purchase date

Usually, we will ask you to return the defective part to the factory.

Parts Not Under Warranty

Contact authorized dealers of this product. If they can't supply original replacement part(s), call DESA International's Parts Department at 1-800-972-7879.

When calling DESA International, have ready

- model number of your generator
- the replacement part number

ACCESSORY

Heavy-Duty Wheel Kit – PA2000

Wheelbarrow-style wheel kit. Makes generator easy for one person to move.

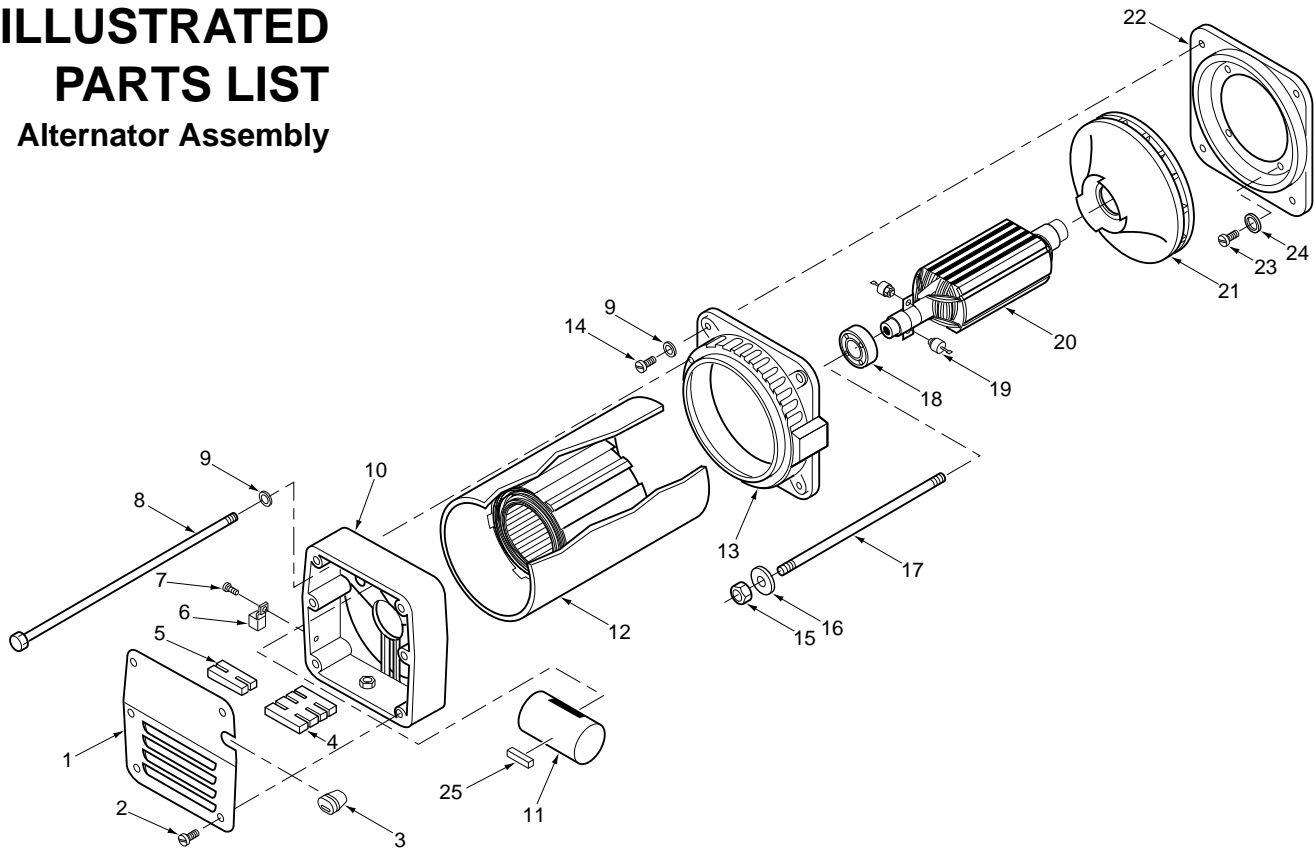
This kit includes:

- Large 12-inch wheels for easy rolling
- Plated tubing and hardware for long life
- Long handles with thick grips for greater comfort and control

Complete installation instructions included.

ILLUSTRATED PARTS LIST

Alternator Assembly

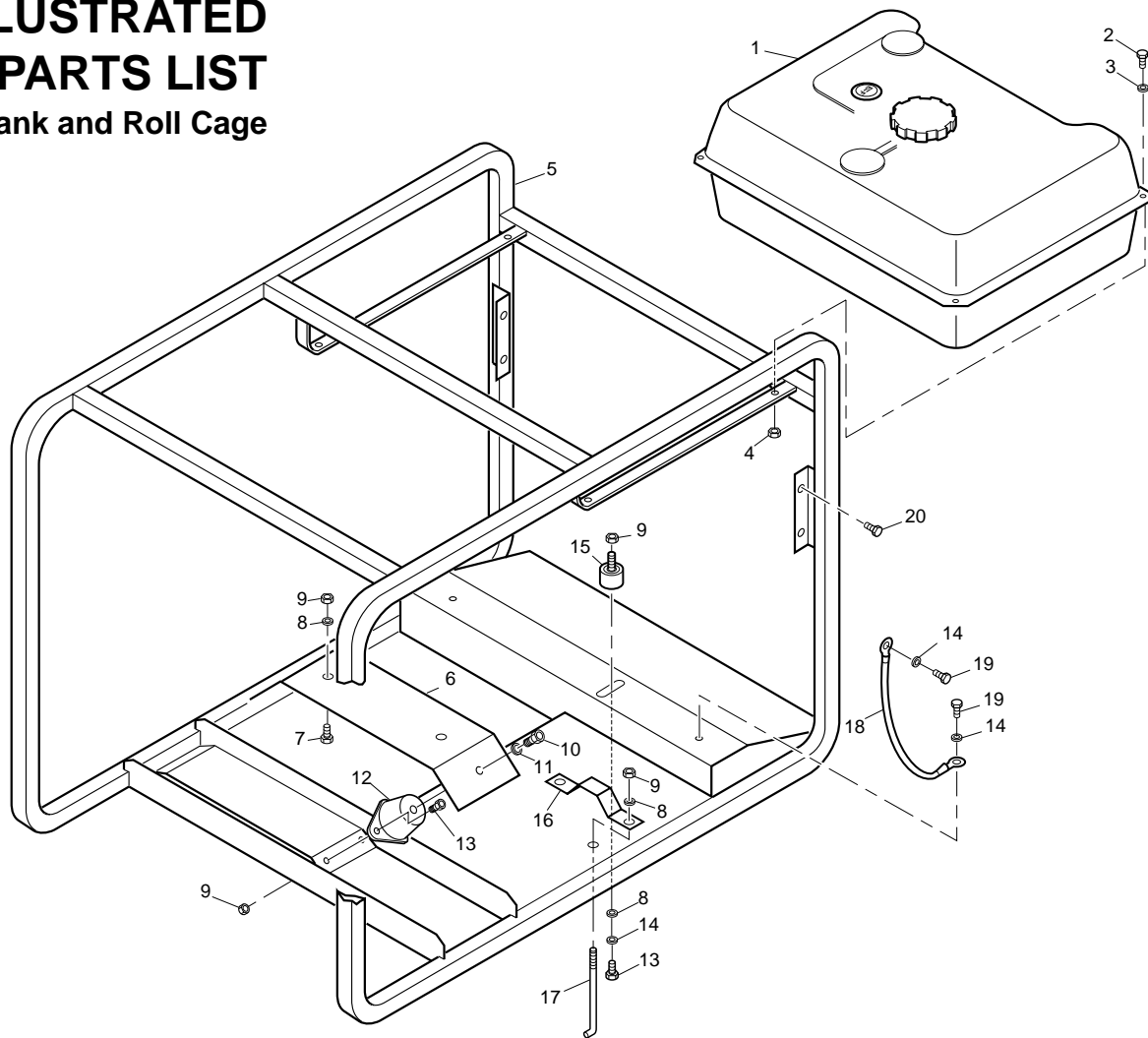


KEY NO.	PART NUMBER	DESCRIPTION	QTY.
	099723-02	Alternator Assembly	1
1	099844-01	End Cover	1
2	099701-01	Screw, M5 x 13	6
3	099760-01	Bushing	1
4	099863-01	Terminal Block (4-block)	1
5	099863-02	Terminal Block (2-block)	1
6	17587000	Ground Lug	1
7	M11084-26	Screw, #10-16 x 3/8"	1
8	099847-02	Stator Bolt	4
9	WLE-5	Lock Washer, 5/16"	4
10	099843-01	Bearing Housing	1
11	27005003S	Capacitor	1
12	*	Stator	1
13	27003002	Fan Bracket	1
14	27003015S	Screw, M8 x 20	4
15	27001010S	Rotor Nut	1
16	27003013S	Washer	1
17	099842-02	Draw Bolt	1
18	27003003	Bearing	1
19	27003012S	Diode	2
20	*	Rotor	1
21	27003008	Fan	1
22	101839-01	Engine Flange	1
23	26322004	Bolt, 3/8-16 x 5/8"	4
24	WLE-6	Lock Washer, 3/8"	4
25	099892-01	Foam Pad	1

* - Part not available by itself. Must purchase Alternator Assembly.

ILLUSTRATED PARTS LIST

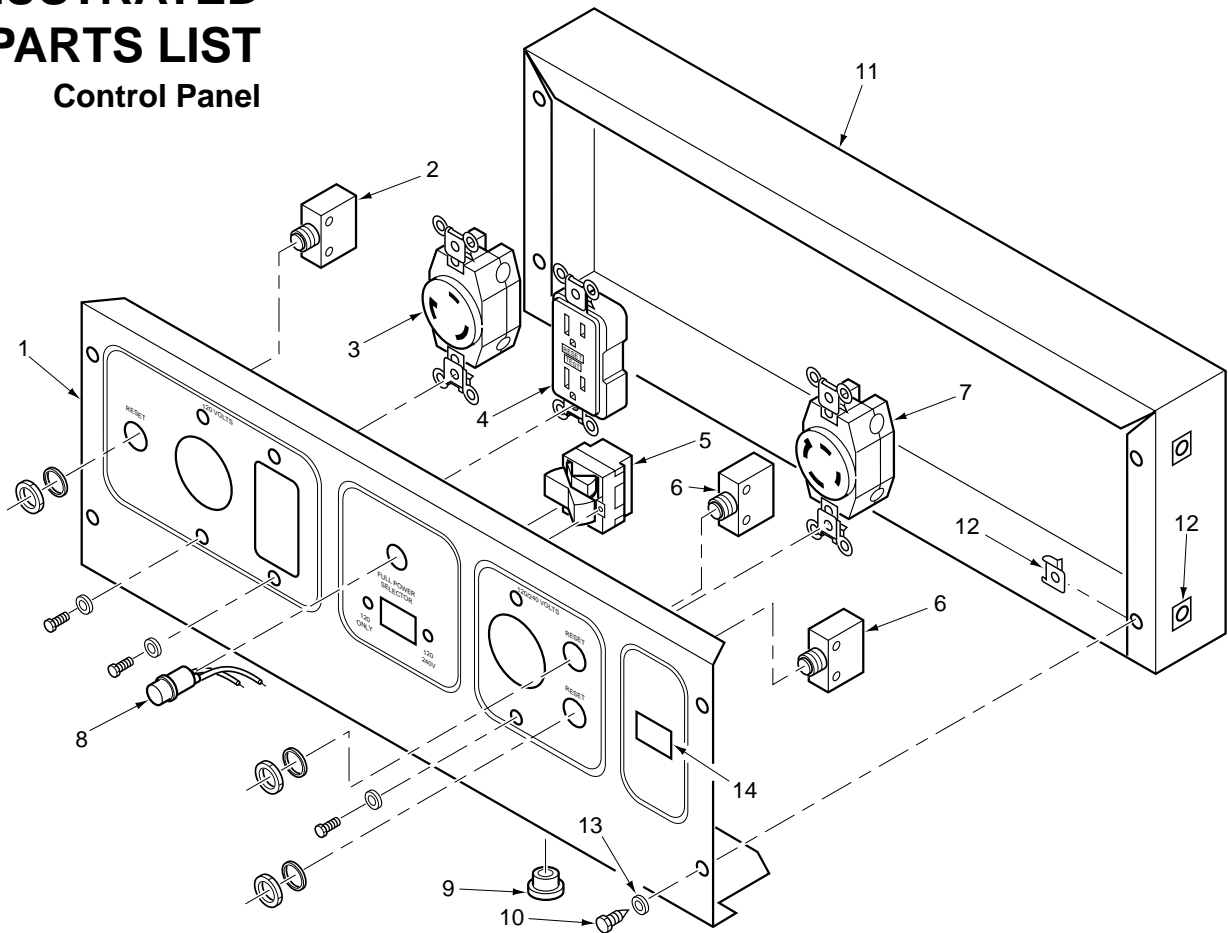
Fuel Tank and Roll Cage



KEY NO.	PART NUMBER	DESCRIPTION	QTY.	KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	099935-01	Fuel Tank Assembly	1	15	26020000	Shock Mount	1
2	HC4-6C	Screw, 1/4-20 x 3/4"	4	16	099749-01	Battery Bracket	1
3	WP-4C	Washer, 1/4"	4	17	099750-01	Hook Bolt	2
4	NTC-4C	Nut, 1/4-20	4	18	14138000	Ground Strap	1
5	099943-01	Roll Cage	1	19	M10908-74	Screw, 1/4-20 x 1/2"	2
6	099945-01	Spreader	1	20	100410-01	Screw, #8-10 x 1/2"	4
7	04110002	Bolt, 5/16-18 x 1 1/2"	2	PARTS AVAILABLE - NOT SHOWN			
8	WP-5C	Washer, 5/16"	5		099947-01	Safety Information Decal	1
9	NEC-5C	Nut, 5/16-18	9		099948-01	Operation Decal	1
10	26302006	Screw, 1/2-20 x 1"	2		099873-01	Battery Cable (Positive)	1
11	WLI-8	Lockwasher, 1/2"	2		099873-02	Battery Cable (Negative)	1
12	17529000	Shock Mounts	2				
13	26007004	Bolt, 5/16-18 x 3/4"	5				
14	WLE-5	Washer, 5/16"	3				

ILLUSTRATED PARTS LIST

Control Panel

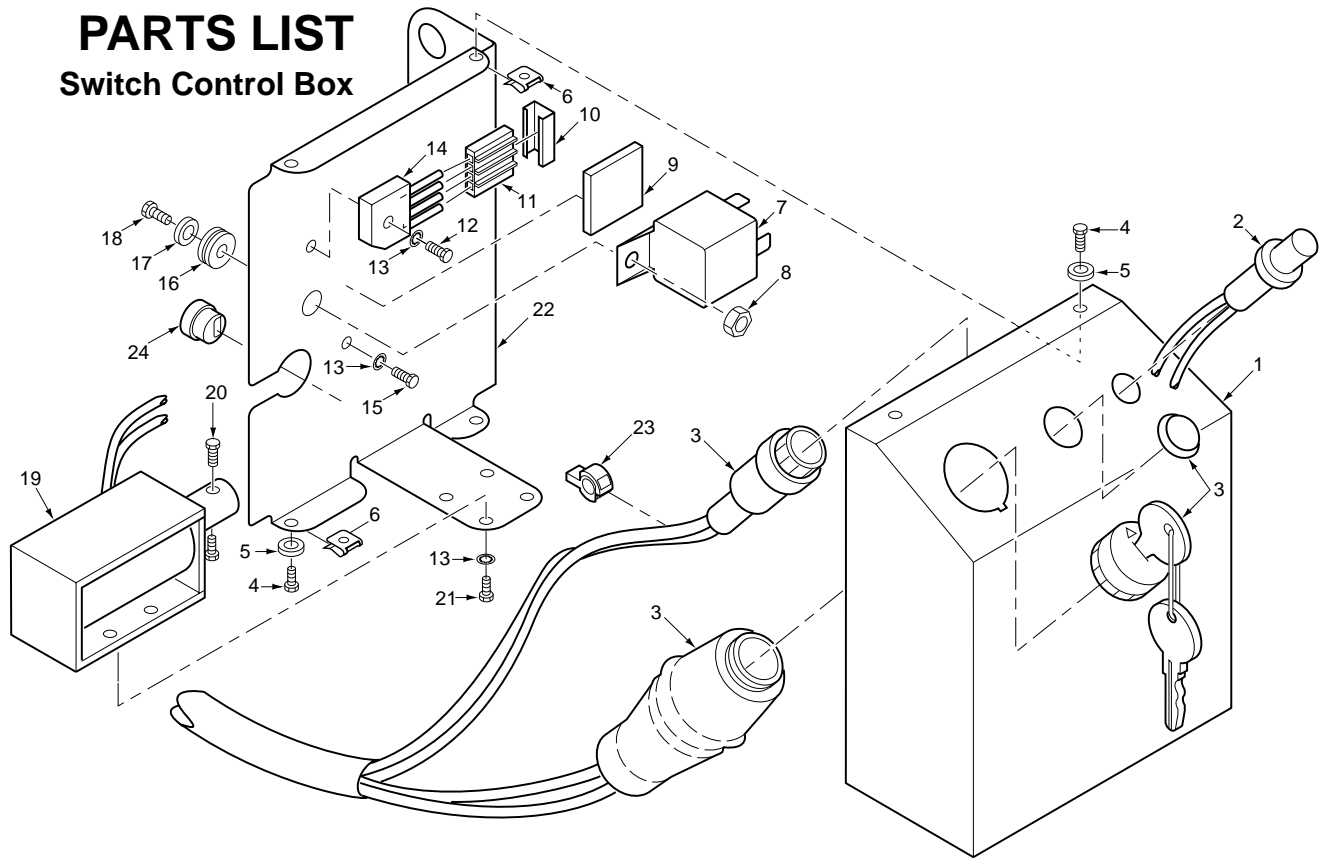


KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	100148-05	Control Panel	1
2	22616009	Circuit Breaker, 20 Amp *	1
3	099833-01	120V, 30A Twist-Lock Receptacle *	1
4	100445-01	120V, 15A Duplex (GFCI) Receptacle *	1
5	099956-01	Full Power Selector Switch *	1
6	22616011	Circuit Breaker, 25 Amp *	2
7	099834-01	120/240V, 20A Twist-Lock Receptacle *	1
8	099804-01	Lamp	1
9	099760-01	Bushing	1
10	24306006	Screw, #8-18 x 1/2"	4
11	100149-01	Control Box	1
12	22261000	Speed Nut, #8	8
13	WLI-2BL	Lock Washer, #8	4
14	099997-01	Switch Plug	1
PARTS AVAILABLE - NOT SHOWN			
	100177-01	Panel Schematic Decal	1

* Includes fastening hardware

ILLUSTRATED PARTS LIST

Switch Control Box



KEY NO.	PART NUMBER	DESCRIPTION	QTY.	KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	100131-01	Switch Control Box	1	14	26509000	Full Bridge	1
2	22721000	Low Oil Light	1	15	M10908-27	Hex Tapping Screw, #10-32 x 1/2"	1
3	099936-01	Key Switch, Lamp, and Harness Assy.	1	16	15020000	Grommet	1
4	24306006	Hex-Head Screw, #8-18 x 1/2"	4	17	WP-3C	Flat Washer, #10	1
5	WLI-2BL	Lock Washer, #8	4	18	26499000	Hex-Head Screw, #10-32 x 3/4"	1
6	22261000	Speed Nut, #8	4	19	26490000	Solenoid	1
7	26498000	Relay	1	20	26494000	Hex-Head Screw, M4 x 8	2
8	NTF-3C	Hex Lock Nut, #10-32	1	21	26492000	Hex-Head Screw, M3 x 8	4
9	RN12000100	Adhesive-Backed PVC Foam	1	22	100132-01	Switch Control Box Bracket	1
10	24478004	Connector Cover	1	23	100085-01	Female T-Tap Connector	1
11	24477004	Connector	1	24	099760-01	Strain Relief Bushing	1
12	M10908-3*	Hex Tapping Screw, #6-32 x 1/2"	1				
13	WLI-1C*	Internal Tooth Lock Washer, #6	6				

* Available from your local hardware store

PARTS CENTRALS

These Parts Centrals are privately owned businesses. They have agreed to support our customer's needs by providing original replacement parts and accessories.

Baltimore Electric

1348 Dixwell Avenue
Hamden, CT 06514
1-800-397-7553
203-248-7553
Parts Department

Parts Company of America

1657 Shermer Road
Northbrook, IL 60062
1-800-323-0620
708-498-5900
Parts Department

Portable Heater Parts

342 N. County Rd. 400 East
Valparaiso, IN 46383
All States
1-800-362-6951
219-462-7441

FBD

601 Hope Street
Bowling Green, KY 42101
1-800-654-8534
502-796-8406

Master Service Center

1184 Wilson NW
Walker, MI 49504
1-800-446-1446
616-791-4760

LA Porte's Parts & Service

2444 North 5th Street
Hartsville, SC 29550
803-332-0191
Parts Department

MTA Distributors

2940 Foster Creighton Drive
Nashville, TN 37204
1-800-264-0225
615-726-2225

Tuco Industrial Products

P.O. Box 5076
Lynwood, WA 98046
1-800-735-1268
206-743-9533
Parts Department

WARRANTY INFORMATION

KEEP THIS WARRANTY

Model _____

Serial No. _____

Date Purchased _____

Always specify model and serial numbers when communicating with the factory.

We reserve the right to amend these specifications at any time without notice. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied.

Note: The two-year limited warranty below covers all non-engine parts of this generator including the alternator. Yanmar warrants the engine. See engine owner's manual for engine warranty information.

TWO-YEAR LIMITED WARRANTY PORTABLE GENERATORS

DESA International warrants each alternator, generator, or electric product of its manufacture, to be free from defects in material and workmanship for two years from the date of first purchase from an authorized dealer, provided that the product has been properly installed, maintained, and operated in accordance with all applicable instructions. The bill of sale or proof of purchase must be presented at the time a claim is made under this warranty.

This warranty is extended only to the original retail purchaser. This warranty covers only the parts and labor required to restore this unit to its proper operating condition. Warranty parts must be obtained through factory authorized dealers and service centers for this product. These dealers and service centers will provide original factory replacement parts. Failure to use original factory replacement parts voids this warranty.

This warranty does not apply to parts that are not in original condition because of normal wear and tear, or parts that fail or become damaged as a result of misuse, abuse, negligence, accident, lack of proper maintenance, alteration, modification, tampering, contaminated fuels, repair using improper parts, or repair by anyone other than an authorized dealer or service center. Routine maintenance is the responsibility of the owner. Travel, handling, transportation, and incidental costs associated with warranty repairs are not reimbursable under this warranty and are the responsibility of the owner.

DESA International makes no warranty with respect to the engine and engine components not of its manufacture. They are subject to warranties of their manufacturers.

To the full extent allowed by the law of the jurisdiction that governs the sale of the product, this express warranty excludes any and all other expressed warranties and limits the duration of any and all implied warranties, including warranties of merchantability and fitness for a particular purpose to two years from the date of first purchase, and DESA International's liability is hereby limited to the purchase price of the product and DESA International shall not be liable for any other damages whatsoever including indirect, incidental, or consequential damages.

Some states do not allow limitation of how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitation of damages may not apply to you.

This warranty provides the original purchaser with specific rights. For information regarding those rights, please consult the applicable state laws.

DESA

INTERNATIONAL

P.O. Box 90004
Bowling Green, KY 42102-9004

100380-01
REV. C
2/95